INSTITUTE OF PUBLIC HEALTH

COLLEGE OF MEDICINE AND HEALTH SCIENCES

PREVALENCE AND ASSOCIATED FACTORS OF MULTIPLE SEXUAL PARTNERS AND CONDOM USE AMONG TRADITIONAL GOLD MINERS IN BERO WEREDA, BENCH MAJI ZONE, SOUTHWEST ETHIOPIA.

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Acronyms

AIDS	Acquired Immuno Deficiency Syndrome
ANC	Antenatal Care
AOR	Adjusted Odds Ratio
BSSII	Behavioral Surveillance Survey round two
CSW	Commercial Sex Workers
EDHS	Ethiopian Demographic and Health Survey
EIFDDA	Ethiopian Inter-faith Forum for Development, Dialogue and Action
HIV	Human Immune deficiency Virus
SNNPR	Southern Nations Nationalities and People
STI	Sexually Transmitted Infection
UNAIDS	United Nations Joint Program on HIV/AIDS
WHO	World Health Organization
CSA	Central Statistical Agency

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Abstract

Introduction: Unprotected sex with multiple partners is the greatest risk factor for HIV infection in developing countries. In Ethiopia risky sexual behaviors such as having multiple sexual partners and unprotected sex with non regular and non cohabiting partner are the major factors that place people at risk of exposure to HIV. Miners are more likely to have multiple partners and engage in unprotected sex. In Ethiopia there are more than half a million traditional gold miners. However, there is lack of solid data and empirical research regarding the risky sexual behavior of this group of population.

Objective: To assess the prevalence and associated factors of multiple sexual partners and condom use among traditional gold miners.

Methods: Community based cross-sectional quantitative study design was conducted from April 17 to 23/2012. Stratified random sampling method was used to get a total of 426 samples of miners. Face to face interview technique using structured questionnaire was used to collect data. The data were entered in to EPI-INFO Version 6 and analyzed using SPSS Version16. Descriptive statistics, bi-variate and multi-variate logistic regression were used to assess the prevalence and the association between outcome and explanatory variables.

Result: Out of the total participants, 33.8% had multiple partners in the past 12 months. Among sexually active miners 55.2% had had sex with non regular partners. Of whom 42.4% didn't use condom consistently. Being single [AOR=10.67; 95%CI: 5.15-22.11], alcohol drinking [AOR=8.5; 95%CI: 3.72-19.43], risk perception to HIV infection and monthly income were significantly associated to multiple partners. Singles [AOR=6.72; 95%CI: 2.41-18.77], having multiple partners [AOR=3.81; 95%CI: 1.36-10.66] and knowledge of HIV status were also found to be predictors of condom use.

Conclusion and recommendation: This study showed high prevalence of multiple sexual partners and low level of condom use among miners. Marital status, alcohol drinking, khat chewing, risk perception, income and living in mining area for longer period were associated factors of multiple sexual partners. Marital status, having multiple partners, place of birth and knowledge of HIV test result were predictors of condom use. These results warrant special attention to this population.

1. Introduction

1.1 Statement of the problem

HIV/AIDS has been the major public health problem of the world especially to Sub-Saharan Africa(1). Ethiopia is among the countries affected greatly by HIV/AIDS epidemic(2). In the country the number of new infections was about 131,145 at an incidence rate of 0.28%(3).

Sexual behavior is one of the most significant factors in the spread of HIV as the vast majority of people newly infected with HIV in sub-Saharan Africa are infected during unprotected heterosexual intercourse (4, 5). In Ethiopia, as in the rest of sub-Saharan Africa, the dominant modes of HIV spread has been through unprotected heterosexual contact (87%) and vertical transmission from mother to child (10%)(2, 6) implying sexual behavior is the most important variable in determining HIV infection.

Many studies in Africa revealed high HIV prevalence among miners. For example, mining company AngloGold Ashanti estimated HIV prevalence of 30% among employees in South Africa and between 15% and 20% at Geita in Tanzania while the national average was 9% at that time(7). Study in Boure, Upper Guinea has shown that majority of traditional gold miners 81.6% did not used condom at last sex while only 18.4% used condom (8).

The 2008 Health Impact Evaluation found higher rates of high risk sexual behavior compared to the 2005 Ethiopia Demographic and Health Survey (EDHS). In particular, the 2008 study reported higher risky sexual behavior among the youth, rural people, the uneducated and those from the lowest wealth quintile (9, 10).

Preliminary report of EDHS 2011 indicated that among women and men who had two or more partners, 47 percent and 16 percent, respectively reported using a condom at the last sexual intercourse in the past 12 months. Fifty four percent of urban men and 6

percent of rural men who had two or more partners in the past 12 months reported using a condom at their last sexual intercourse (11).

According to the World Health Organization (WHO) report the incidence of HIV infection globally declined by 15% between 2001 and 2010. In sub Saharan Africa the incidence was decreased by 16% between 2001 and 2010 (1). The most important factor accounting for these encouraging declines in new HIV infections in many countries is behavioral change. Among young people, drops in HIV incidence have been associated with a significant positive trend in important behavior indicators, including increased condom use, delayed sexual debut, and reductions in multiple partnerships (4).

In Ethiopia anecdotal evidence indicates that there are more than half a million traditional gold miners in six regions of the country. However, information on sexual activity among traditional gold miners in the country is scarce (12).

Therefore, this study will provide information regarding risky sexual behavior among traditional gold miners in Bero wereda, Bench Maji zone, Southern Ethiopia. The result of this study will help for designing suitable interventions for the prevention and control of the epidemic.

1.2 Review of Related Literature

1.2.1 Multiple Sexual Partners and Condom use

Many years have passed since the HIV epidemic has been a threat to mankind around the world. Its burden, however, is highest in developing countries especially in sub-Saharan Africa. Its transmission in developed world had been highly attributed to homosexuality and drug abuse while heterosexual transmission plays a major role in developing countries(1, 4).

Having unprotected sex with multiple partners remains the greatest risk factor for HIV infections in sub Saharan Africa (4). In Ethiopia having multiple sexual partners and

unprotected sex with non regular and non cohabiting partner are risky sexual behaviors that place people at risk of exposure to HIV(10).

According to John Connell and Joel Negin, miners leave home for extended periods and live in intense, male-dominated and high-risk environments. They concluded that miners are more likely to have unsafe sexual behaviors such as low levels of condom use, high number of concurrent partnerships and visiting commercial sex workers (13).

A study conducted in China found higher rate of high risk sexual behavior among miners. The study indicated that 9.4% of miners admitting to looking for commercial sex workers (CSW). Among those who looked for CSWs, 77.2% did not use condoms. During the past 12 months, 82.9% of miners had not used a condom and 14.7% occasionally used condoms (14).

Other studies in China also reported high prevalence of multiple sexual partners and low level of condom use. For instance, 61.2% of miners never used condoms when they have sex with female sex workers and 66.1% of the miners had at least 2 sexual partners in the past 12 months, with the most being 70 partners in the past 12 months (15). Thirty four percent of miners in mining districts of Yunnan, China reported having two or more sexual partners and 18.9% visited CSWs of whom 72% didn't used condom during sex with CSWs (16).

Another study conducted in five mining areas of south Africa indicated that there was relatively a high proportion of participants having multiple sexual partners (27%) and a lack of condom use with non-regular sex partners (23%)(17).

Study conducted in a mining area of Tanzania also revealed that most Tanzanian male mine workers (65%) and male community members (54%) have more than one sex partner in the last 12 months. Payment for sex was common, with 61% of adult male community members and 55% of Tanzanian male mine workers had paid for sex in the last year. Of these men, 75% of those from the community and 85% of Tanzanian mine workers were not always using condoms for paid sex (18).

1.2.2 Associated Factors for Multiple Sexual Partners and Condom Use

The factors that may exacerbate the HIV vulnerability of mine workers include dangerous working conditions, boredom and loneliness, lack of social cohesion and duration of time spent away from home. This may induce a person to behave in a way that she or he otherwise would not under normal circumstances such as engaging in risky sexual behavior (19).

Population migration and mobility are also major contributors to the risky sexual behavior as they increase the number of sexual partnerships as well as contacts with high-risk groups such as sex workers. Loneliness, insecurity and freedom from social norms provide an impetus to risky sexual behavior (20, 21).

In most contexts, high levels of alcohol consumption are the most likely factors to be associated with risky sexual activity. A study in small towns and rural villages of Botswana indicated men and women who screened positive for heavy drinking had over three times the odds of reporting a history of unprotected sex with a non monogamous partner and had strongly associated with having multiple partners for both men and women compared to non alcohol users(22). A study conducted for the co-occurrence of substance use and risky sexual behavior revealed that 41.6% and 29.6% of multiple sexual partners and non condom use occurred together respectively(23).

Stueve and O'Donnell examined relations between early alcohol use and subsequent alcohol and sexual risk behaviors among urban adolescents and found similar positive connections between substance use and risky sexual behaviors (24). A study conducted in Cambodia revealed also that among boys and girls risky sexual behavior is significantly associated with higher levels of substance use (25).

Results of different studies in Ethiopia show that there is a positive association of khat chewing and multiple sexual partners. For example a study conducted in Ethiopia of Assandabo woreda found that individuals who chewed Khat were two times more likely to have multiple sexual partner compared to who did not use khat (26). Another study

conducted in Southern Nations Nationalities and peoples region and the Oromia regional states of Ethiopia also found similar association of kcat chewing and multiple sexual practice (27).

Several studies have shown that age, marital status, residence and level of education are associated with condom use. A study in Mozambique revealed that the likelihood of condom use was positively related to age only among never-married men; in all subgroups, it increased with level of education. Condom use was low among ever-married individuals, but was significantly more common among those whose last partner had been someone other than a spouse (28). Study in Ethiopia showed that compared to married or cohabited, more singles reported having multiple sexual partners (0.9% Vs 7% (9).

Disparities in sexual behavior including age at first sexual intercourse, condom use and multiple sexual partners between men and women were reported by various studies (11, 29). A study in Kenya also revealed that ethnic difference, level of education, age and marital status were associated with risky sexual behavior for both women and men (30).

Knowledge about HIV prevention and ways of transmission influence risky sexual behavior of individuals. Different reports indicated that, behavioral change and increased comprehensive correct knowledge reduces HIV incidence and prevalence in most countries with high HIV prevalence (4). A national survey conducted in Ethiopia for the Health Impact Evaluation in 2008 found that knowledge of HIV prevention methods was 28.1% among women – lower than the 34.6% reported by EDHS 2005(9, 10). However, another study in Ethiopia among Gondar high school students show that knowledge about HIV/AIDS has to be strengthened by continues health education to bring behavioral changes as students who have adequate knowledge engaged in risky sexual practices(31).

According to UNAIDS global report there is evidence to suggest that first having sex at a later age reduces susceptibility to infection per act of sex, at least for women (4). In

Ethiopia 6% of women age 15-24 had sex before age of 15 while 28% of young women age 18-24 had sex before age of 18 (9).

Perception of risk to HIV/AIDS is also observed to have relation with risky sexual behavior. According to a study in Kenya the association between perception of risk and reporting of risky sexual behavior is stronger for Kenyan men. Men who perceived themselves to be at 'low risk' had about double the odds of those who perceived themselves to be at 'no risk'; those who perceived 'moderate to great risk' had more than three times the odds of reporting risky sexual behavior compared to 'no risk'(30).In Ethiopia Self risk perception of infection with HIV was low in spite of continued risky sexual behavior (32).

1.3 Justification

More than half a million individuals are involved in traditional gold mining in six regions of Ethiopia(12). Bero wereda is one of the areas where gold is produced by traditional gold miners.

Despite of inadequate health facilities and services, there are many traditional gold miners in the wereda. Most of the miners are migrants who came from different regions and zones of Ethiopia. They earn much money and usually drink alcohol. There are commercial sex workers nearby mining sites whose clients are traditional gold miners.

However, there is a lack of solid data and empirical research regarding the risky sexual behavior to HIV/AIDS among traditional gold miners. Therefore, this study will provide prevalence and the associated factors of multiple partners and condom use among traditional gold miners which will help for policy planning and interventions.

2. Objectives

2.1 General Objective

To assess the prevalence and associated factors of multiple sexual partners and condom use among traditional gold miners in Bero wereda, Bench Maji zone, Southern Ethiopia.

2.2 Specific Objectives

To determine the prevalence of multiple sexual partners and condom use.

To identify the factors associated with multiple partners and condom use.

3. Methods

3.1 Study Design and Period

Community based cross-sectional quantitative study design was used to assess the prevalence and the associated factors of multiple partners and condom use among traditional gold miners in Bero district, Bench Maji zone, Southwest-Ethiopia. The data were collected from April 17 to 23/2012.

3.2 Study Area

The study was conducted in Bero district where traditional gold mining is taking place. Bero district is found in Bench Maje zone, SNNPR, southwest Ethiopia, 710 km from Addis Ababa. The district has one urban kebele and 12 rural kebeles with estimated total population of 13,934 among which 11,565 live in rural kebeles in 2011. (33). Traditional gold mining takes place in three rural kebeles, namely Siyali, Gabisa and Shola. A total of 4,604 people live in these three kebeles. Most of them were traditional gold miners.

3.3 Source Population and Study Population

3.3.1 Source Population

The source population for the study was all traditional gold miners of age 15 and above in Bero district.

3.3.2 Study Population

The study population was traditional gold miners of age 15 years and above in Bero district who were mining during study period.

3.4 Inclusion and Exclusion Criteria

3.4.1 Inclusion Criteria

Traditional gold miners of age 15 years and above who were mining in the district during data collection were included in the study.

3.4.2 Exclusion Criteria

Traditional gold miners who were not member of a mining team during the study period were excluded.

3.5 Sample Size and Sampling Procedure

3.5.1 Sample Size Determination

The sample size for the study was estimated using a single population proportion. Prevalence of all dependent and independent variables in different studies among miners was considered and the one which gives the largest sample size was used to determine the sample size. Thus, prevalence of alcohol use (48.3%) among miners which was obtained from a study conducted in Tanzania was used to determine the sample size (18). Other quantities used in the sample size determination were margin of error 0.05, and confidence level at 95%.

Thus to determine the sample size we used the formula:

$$n= (Z_{\alpha/2})^2 p\ (1-P)/d^2$$

Where P = Proportion

Z = Z- score associated with 95% confidence level =1.96

d = Margin of error = 0.05

Therefore, $n = (1.96)^2(0.483)(0.517)/ (0.05)^2 = 384$

By adding contingency for non response rate of 10 % (using a finite population formula) the following sample size was obtained.

Sample size = [1/ (1-10%)] x384= 427.

In the study area, however, there were 442 mining teams. Each mining team has 6 to 8 members who have similar characteristics in their background. All of the teams were considered and one miner from each team was selected randomly to obtain the total sample size of 442.

3.5.2 Sampling Procedure

The practices of traditional gold mining methods were considered to get representative sample of the study population. The process followed three steps. Firstly they dug a hole of radius 50 to 60 centimeters wide and an average depth of 20 meters into the

ground. Secondly they dug horizontally in all directions and the soil assumed to have the gold be picked out to the ground. Finally, that soil be dissolved in to water and washed out to find out possible gold in it.

Thus, these processes of traditional gold mining require team works. Each member of a team is expected to dig, pick out, dissolve and wash the soil. For this reason, miners form a team voluntarily by themselves which contains six to eight miners' members.

In the district, there were three kebeles in which traditional gold mining took place during the study period, namely Shola, Siyali and Gabissa. The number of teams in each kebele were counted and found that in Shola kebele there were 312, in Siyali there were 108 and in Gabissa there were 32 teams; totally there were 442 teams.

Assuming homogeneity within a team and heterogeneity among teams, one miner from each team was selected using lottery method for the study. Four hundred forty two miners, one from each team, were selected randomly using lottery method but selected miners from 16 teams refused to participate in the study. Finally, 426 selected miners, each from 426 teams were consented and were participated in the study.

3.6 Variables of the Study

3.6.1 Dependent Variable

-Multiple sexual partners

-condom use/not use

3.6.2 Independent Variables

Socio demographic and economic variables: age, sex, ethnicity, migration, marital status, religion, income and education.

Behavioral factors: age at first sex, substance use includes alcohol use, khat chewing, shisha.

Cognitive factor: Knowledge of HIV prevention methods, believes, self perception to risk of HIV

Socio cultural factors: community perception to multiple partner and condom use.

3.7 Operational Definition

Regular Sexual partner: Includes spouse or a sex partner who has cohabited (lived-in) for twelve months or longer.

Condom use: using condom every time they have sexual intercourse with non regular partner.

Multiple sexual partners: having more than one sexual partner in the past 12 months prior to the study period.

Female sex worker: a female who sells sex for money and had sex with miners.

Knowledge of HIV prevention methods: if respondents correctly identified the three main ways to prevent HIV transmission: abstinence, being faithful to one uninfected partner and condom use, then they will be considered as knowledgeable.

3.8 Data Collection Procedures

3.8.1 Data Collection Tools

To collect data from participants, structured questionnaire was prepared in English and then translated in to Amharic for interview and translated back to English for data entry. The questionnaire has five components. The first part was about respondents' socio demographic characteristics. The second part contains questions about substance use. The third part of the questionnaire was designed to collect data on sexual behavior of respondents. The fourth part was about knowledge of HIV prevention methods, believes and risk perception of respondents. And the last part of the questionnaire was about community perceptions towards condom use and multiple sexual partners.

Eight data collectors and one supervisor all of them were degree holders involved in the study.

3.8.2 Data Quality Control Issue

To ensure quality of data, pre-test of data collection tools was done on 25 respondents who were not included in the main study. The necessary correction was done after the pre test. Appropriate measures were taken on time for completeness and accuracy of data on the spot by supervisors. This quality checking was done daily after data

collection and amendments were made before the next data collection. The collected data were again checked out for the completeness, accuracy and clarity by the principal Investigator and supervisors before data entry.

Data clean up and cross-checking was done before analysis. Training was given to data collectors and supervisors for two days on how to approach study subjects and on how to use the questionnaire. Supervision was also done at the spot by principal investigator.

3. 9 Data Processing and Analysis

Before conducting the analysis data were checked for the completeness and accuracy. Then the variables were coded and data was entered to the computer using EPI-Info version 6. Then data cleanup was done to avoid errors and was exported and analyzed using SPSS version 16 software.

The descriptive statistic and multiple logistic regressions were carried out to compute the different proportion and relevant association. The Hosmer and Lemeshow goodness of fit tests was also checked to see whether the necessary assumptions for the application of multiple logistic regressions were fulfilled. To fill the shortcomings of Hosmer and Lemeshow goodness of fit test partially, back ward stepwise multiple logistic regressions were also used to scan for multi-co linearity as the weaker variable would get out of the model first.

Bivariate logistic analysis was made to examine separate association of each independent variable with the dependent variable. Those variables which were found to be p value of 0.2 or less in bivariate analysis were considered and entered to develop multivariate model. Finally those significant variables at p value 0.05 and at 95% confidence interval in multivariate analysis were used to determine the actual predictors for risky sexual behavior. Odds Ratios were used to determine the strength of association between selected variables. Confounding effect was controlled using multiple logistic regression analysis.

4. Result

4.1 Socio demographic characteristics

A total of 426, which is 96.4 % participation rate, participated in the study. All of the participants were males as there was no female miner. The mean age of the study population were 25.3+6.49SD year ranging from 15 to 48 years. Most of the participants 404(94.8%) were age of greater than 18 years and 233 (54.7%) were never married. Among married participants 92 (60.1%) were not living with their spouses, of them thirty percent separated from their spouse longer than 6 months. (Table 1)

Only 18(4.2%) completed preparatory and above, 167(20.9%) completed junior high school and 74(17.4%) participants cannot read and write. Two hundred thirty seven (55.6%) were orthodox and 141(33.1%) were protestant in religion. The average monthly income was 4351$\pm$2700SD birr which ranges from 900 to 15000. (Table 1)

Two hundred nine (49.1%) participants were working in mining for less than a year. Most of the participants 415 (97.4%) came from different parts of the country, 236 (55.4%) were from different zones of SNNPR and 333 (78.2%) lived in the district at most three years. (Table 1)

About 329 (77.2%) of the participants were Amhara(17.1%), Weleyta(15.7%), Hadiya(15.5%), Kefa(14.8%) and Oromo(14.1%) in ethnicity. (Figure 1)

4.2 Substance use

Alcohol drinking was common among miners. One hundred twenty nine (30.2%) miners drunk alcohol at least once a week, 143 (33.6%) drunk sometimes and the remaining 154 (36.2%) never drink. Three hundred twelve (73.2%) participants never chew khat 19% use sometimes and about 8% use khat at least once a week. Shisha use was not common 393 (92.3%) participant reported that they never use shisha. (Figure 2)

Table 1: Socio-demographic characteristics of traditional gold miners in Bero wereda, Bench Maji zone, Southern Ethiopia, April, 2012.

Variables	Number	Percent
Age		
15-19	95	17.6
20-24	149	35
>24	202	47.4
Religion		
Orthodox	237	55.6
Catholic	2	.5
Protestant	141	33.1
Muslim	39	9.2
No religion	7	1.7
Educational level		
Cannot read and write	74	17.4
Primary	89	20.9
Junior high school	167	39.2
High school	78	18.3
Preparatory and above	18	4.2
Marital status		
Married	153	35.9
Cohabitating	16	3.8
Never married	233	54.7
Divorced, separated, widowed	24	5.6
Place of birth		
In Bero woreda	11	2.6
In Bench maji zone but not in this woreda	51	12.0
In SNNPR but not in Bench maji zone	236	55.4
In other region of the country	128	30.0
Worked in mining		
less than 1 year	209	49.1
1-3 years	116	27.2
more than 3 years	101	23.7
Monthly income		
Less than 4000	247	58
4001-8000	141	33.1
Greater than 8000	38	8.9

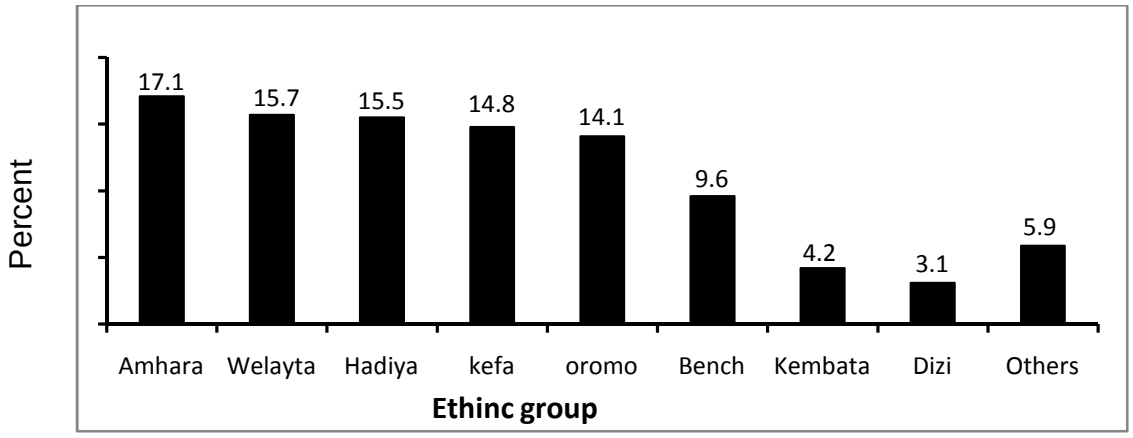

Figure 1. Percentage of ethnic group among traditional gold miners in Bero District, Bench maji zone, Southweast Ethiopia. April, 2012.

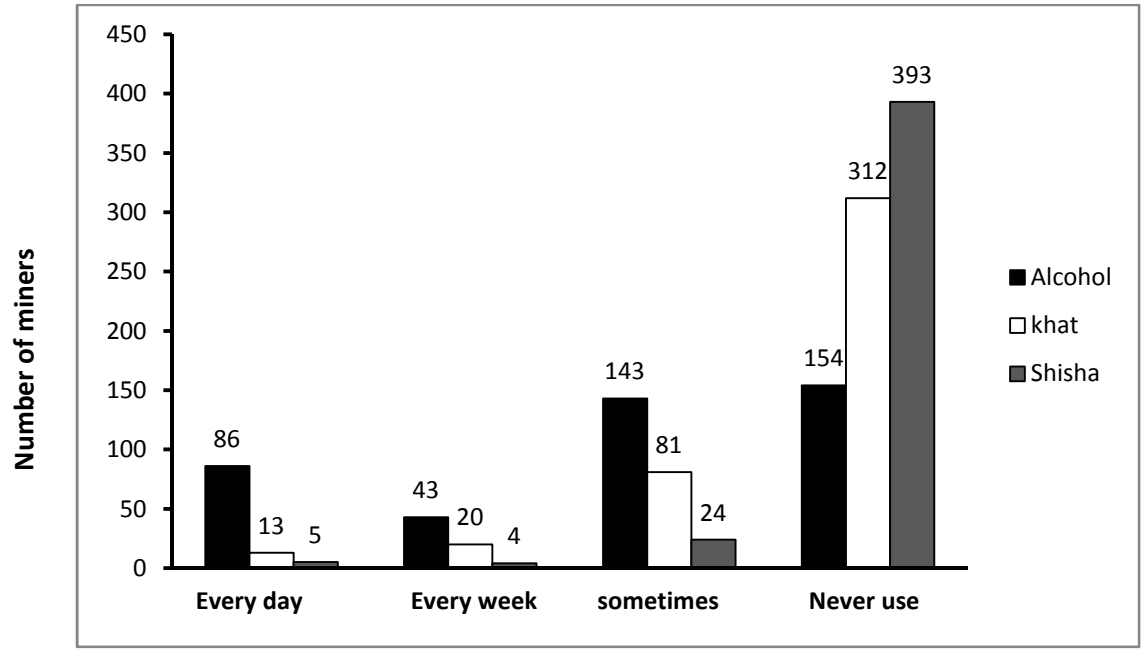

Figure 2. Substance use of study subjects in Bero woreda, Bench Maji zone, southern Ethiopia, April, 2012

4.3 Knowledge of HIV prevention methods, believes and risk perception on HIV/AIDS

About forty nine percent of the participants have knowledge of all the three HIV/AIDS prevention methods. Fifty one (12%) participants did not know any of the three HIV/AIDS prevention methods, 118 (27.7%) know any two of the three methods and the remaining 47 (11%) know only one of the three HIV/AIDS prevention methods.

Most of the participants (90%) believe that having multiple sexual partners leads to the acquisition of HIV/AIDS, 323 (75.8%) participants believe that alcohol consumption predispose to HIV/AIDS. Two hundred ninety seven (69.7%) perceive themselves as they are unlikely to contract HIV/AIDS as the result of their current sexual behavior and only 39 (9.2%) feel that they are at risk of HIV infection because of their current sexual behavior. The percentage of traditional gold miners who had ever tested for HIV was 67.6%. (Table 2)

One hundred ninety sex (46%) participants think that their best friends consistently use condom to prevent HIV infection and 225 (52.8%) participants reported that their best friends advice and encourage them to use condom at any sexual encounter. About sixty percent of the participants said that the culture of the community accept having multiple sexual partner and sixty two percent participants reported that the community they are living with support use of condom.

Table 2: Knowledge of HIV prevention methods, believes to HIV acquisition and risk perception among traditional gold miners in Bero district, Bench maji zone, Southwest Ethiopia.

Variables		Number	Percentage
Knowledge of HIV prevention methods			
	Know all three methods	210	49.3
	Know any two methods	111	26.1
	Know only one method	47	11.0
	Do not know any method	51	12.0
Believe having multiple sexual partners predispose to HIV acquisition			
	Yes	382	89.7
	No	20	4.7
	Do not know	24	5.6
Believe alcohol consumption predispose to HIV acquisition			
	Yes	323	75.8
	No	48	11.3
	Do not know	55	12.9
Risk perception			
	High	39	9.2
	Moderate	90	21.1
	Low	297	69.7
Ever tested for HIV/AIDS		288	67.6

4.4 Sexual characteristics

All participants were asked whether they ever had sex or not. Three hundred forty six (81.25%) traditional gold miners reported that they had history of sexual intercourse in the past. The mean age at first sexual intercourse was 18.5 $\pm$ 2.54SD years. The minimum and maximum ages at first sexual intercourse were 15 and 28 years respectively. Of whom only 112 (32.4%) used condom at their first sexual intercourse.

Among three hundred forty six participants who had ever practiced sex, 299 (86.4%) had sexual intercourse in the past 12 months prior to the study period, of whom 202 (67.6%) did not used condom consistently. Totally there were about 146 (48.8%) users of condom, of whom 97 (32.4%) were consistent users. Majority 135(93.7%) of married participants, 13(81.3%) cohabitants, 49(39.2%) never married and 5(29.4%) wdowed/separated/divorced did not used condom consistently. (Table 3 and 5)

Among sexually active participants in the past 12 months 165 (55.2%) respondents reported that they had sex either with commercial sex worker, causal partner or multiple partners. Of whom 24(14.5%) were married/cohabited and 141(85.5%) were singles. Only 57.6% consistently used condom when they had sex with those non regular partners. Most of them (84.8%) drink alcohol and 41.2% chew khat. Regarding their education, 15.8% cannot read and write, 24.2%, 35.2%, and 24.8% of them completed primary, junior high school, and high school and above respectively. .

In the past 12 months prior to the study period, 144 (33.8%) participants experienced multiple sexual partners. Of those who experienced multiple sexual partners 24 (16.7%) were married/cohabited and 120 (83.3%) were singles. Among participants who experienced multiple sexual partners within the past twelve months, 40.3% did not used condom consistently. Among those who had one partner, only 7.1% consistently used condom. (Table 5)

Table 3: Sexual characteristics of traditional gold miners in Bero wereda, Bench maji zone, Southern Ethiopia, April 2012.

Variables	Number	Percent
Ever practice sex(n=426)		
Yes	346	81.2
No	80	18.8
Age at first sexual intercourse(n=346)		
<18	125	36.1
18-20	164	47.4
21-24	47	13.6
>24	10	2.9
Had sex in past 12 months(n=346)		
Yes	299	86.4
No	47	13.6
Type of partner during the last 12 months* (n=299)		
Marital	136	45.5
Cohabiting	20	6.7
Commercial	153	51.2
Causal	35	11.7
Condom use in the past 12 months(n=299)		
Non users	153	51.2
Occasionally	49	16.4
Always	97	32.4
Number of sexual partner in past 12 months(n=426)		
No sexual partner	127	29.8
Only one partner	155	36.4
More than one partner	144	33.8
Condom use within multiple sexual partner(n=144)		
Non users	17	11.8
Occasionally	41	28.5
Always	86	59.7
Condom use at last sex		
Yes	137	39.6
No	209	60.4

***Total exceeds 100% as more than one response was possible

Two hundred nine (60.4%) participants reported that they did not used condom at their last sexual intercourse. One hundred fifty six (45.1%) had their last sex with marital/cohabiting partner whereas 190 (54.9%) participants had the last sex either with CSW or causal partner. Among those who had had the last sex either with commercial sex workers or causal partners 65 (34.2%) did not use condom. (Table 5)

More than half (51.2%) of the respondents had commercial partners and 136 (45.5%) had marital partner among who had sexual practice in the past 12 months prior to the study period. Of those participants who had commercial partner 60 (39.2%), of those miners who had marital partner 134 (98.5%) and of those miners who had causal partner 68.6% did not used condom consistently. (Table3 and 5)

4.5 Reasons for not using condom

Reasons for not consistently using condom in the past 12 months include trust of partner 154 (76.2%), want to have a child 41 (20.3%), dislike condom 28 (13.9%), not comfortable 23 (11.4%), being drunk 20 (10%) and other reasons 40 (19.8%).

The two most frequently reported reasons for not consistently using condom by married participants were trust of their partner (95.6%) and desire to have child (28.9%). Dislike of condom (44.9%) was the most commonly reported reason for not consistently using condom among never married and being drunk (30.6%) was reported as the second most important reason. Among commercial partners, the most frequently reported reasons were trust of partner and dislike of condom. Being drunk and not comfortable were the third and fourth reasons reported by commercial partners. The most important reason reported among causal partners was dislike of condom. (Table 4)

Table 4: Percentage of respondents who gave reasons for not using condom with different type of partner in the past 12 months among traditional gold miners in Bero wereda, Bench maji zone, southern Ethiopia, April 2012. N=202.

Type of partner	Reasons given for not using condom with different type of partner						
	Trust (%)	Being drunk (%)	Dislike (%)	Not at hand (%)	Not comfortable (%)	To have child (%)	Others (%)
Marital	96.3	2.2	1.5	6	6.7	29.9	5.2
Cohabiting	93.3	6.7	-	-	-	40	13.3
Commercial	35	33.3	35	6.7	30	-	16.7
Causal	25	20.8	58.3	8.3	37.5	-	12.5

Table 5: Condom use within 12 months, at first sex and last sex among traditional gold miners in Bero wereda, Bench maji zone, Southern Ethiopia. April 2012.

Variables	Condom use N (%)		Total
	Yes	No	
All sexually active in 12 months	**97 (32.4)**	**202 (67.6)**	**299**
No of sexual partner in 12 months			
One partner	11(7.1)	144(92.9)	155
More than one partner	86(59.7)	58(40.3)	144
Marital status			
Married	6 (4.3)	135 (93.7)	141
Cohabited	3 (18.8)	13 (81.2)	16
Never married	76 (60.8)	49 (39.2)	125
Separated/widowed/divorced	12 (70.6)	5 (29.4)	17
Sexual partner			
Marital	2 (1.5)	134 (98.5)	136
Cohabiting	5 (25)	15 (75)	20
Commercial	93 (60.8)	60 (39.2)	153
Causal	11 (31.4)	24 (68.6)	35
Sex with CSW/causal/marital & cohabiting	**95 (57.6)**	**70 (42.4)**	**165**
Have multiple partner			
Yes	86 (59.7)	58 (40.3)	144
No	9 (42.9)	12 57.1)	21
Marital status			
Married/cohabited	7(29.2)	17(70.8)	24
Single*	88(62.4)	53(37.6)	141
Condom use at first sex	**112 (32.4)**	**234 (67.6)**	**346**
Condom use at last sex	**137 (39.6)**	**209 (60.4)**	**346**
Marital status			
Married	12 (7.8)	141 (92.2)	153
Cohabited	3 (18.8)	13 (81.2)	16
Never married	109 (71.2)	44 (28.8)	153
Separate/widowed/divorced	13 (54.2)	11 (45.8)	24
Sexual partner			
Marital partner	8 (5.7)	133 (94.3)	141
Cohabiting partner	4 (26.7)	11 (73.3)	15
CSW partner	121 (68.8)	55 (31.2)	176
Causal partner	4 (28.6)	10 (71.4)	14

***** Single = never married, separated, widowed or divorced

4.6 Risky sexual behavior and associated factors

Respondents' age and education were not significantly related with multiple sexual partners in bi-variate and multi-variate analysis. There was strong association between marital status and multiple partners. Single respondents were ten times more likely to have multiple sexual partner with [AOR=10.67; 95%CI: 5.15-22.11] Compared to married respondents.

Alcohol drinking and khat chewing were positively associated with having multiple sexual partners. Those who drank alcohol at least once a week were eight times [AOR=8.5; 95%CI: 3.72-19.43] more likely to have multiple partners than who never drank alcohol. Participants who chewed khat at least once a week were three times [AOR=3.44; 95%CI: 1.68-7.03] more likely to have multiple partners than who never chew khat.

Respondents who perceive as they were at high risk were seven times [AOR=6.62; 95%CI: 2.34-18.68] and perceive moderate risk were five times [AOR=5.22; 95%CI: 2.72-10.03] more likely to have more than one partner than those who perceive low risk towards HIV/AIDS. Those who believe having multiple sexual partner do not predispose to HIV infection were three times [AOR=3.44; 95%CI: 1.35-8.77] more likely to have multiple sexual partners than who believe having multiple sexual partner predispose to HIV infection.

Traditional miners who lived more than three years continuously in the district were three times [AOR=3.36; 95%: 1.56-7.21] more likely to have more than one sexual partner than those who lived less than a year in the district. Monthly income has also positive association with having multiple sexual partners. Those whose monthly income was more than 8000 birr were about six times [AOR=6.59; 95%CI: 2.29-18.95] more likely to have multiple partners than those whose monthly income was less than 4000 birr. (Table 6)

Table 6: Association of selected variables with multiple sexual partners among traditional gold miners in Bero wereda, Bench maji zone, Southern Ethiopia.

variables	Multiple partner		Unadjusted odds ratio(95%CI)	Adjusted odds ratio(95%CI)
Marital status	Yes	No		P<0.001
Married	24	146	1.00	
Single***	120	136	5.37 (3.27, 8.82)*	10.67 (5.15, 22.11)*
Lived continuously in Bero wereda				P=0.008
Less than a year	47	155	1.00	
1 to 3 years	49	82	1.97 (1.22,3.19)*	1.482 (0.73,3.03)
More than 3 years	48	45	3.518 (2.09,5.93)*	3.357 (1.56,7.21)*
Drink alcohol				P<0.001
Never	16	138	1.00	
Sometimes	53	90	5.08 (2.74, 9.43)*	3.42 (1.57,7.44)*
At least once a week	75	54	11.98 (6.41, 22.37)*	8.5 (3.72, 19.43)*
Khat chewing				P=0.003
Never chew	83	229	1.00	
Sometimes	46	35	3.62 (2.19,6.02)*	3.44 (1.68,7.03)*
At least once a week	15	18	2.3 (1.11, 4.77)*	1.75 (0.52, 5.93)
Believe having multiple partner predispose to HIV infection				P=0.01
No	28	16	4.01 (2.13, 7.76)*	3.44 (1.35, 8.77)*
Yes	116	266	1.00	
Risk perception				P<0.001
Unlikely	59	238	1.00	
Neutral	56	34	6.64 (3.98, 11.09)*	5.22 (2.72, 10.03)*
Likely	29	10	11.7 (5.4, 25.35)*	7.46 (2.75, 20.25)*
Monthly income(Birr)				P=0.002
<4000	68	179	1.00	
4001 to 8000	53	88	1.59 (1.02, 2.46)*	1.68 (0.88,3.16)
>8000	23	15	4.04 (1.99, 8.19)*	6.59 (2.29, 18.95)*

*p<0.05

**1.00 indicates the reference group

*** Single= never married, separated, widowed or divorced

There was strong association between marital status and condom use during sex with non regular partners. Singles were seven times more likely to use condom compare to married miners [AOR=6.72; 95%CI: 2.41-18.77]. Condom use during sex with non regular partners was also significantly association with having multiple sexual partners, place of birth and knowledge of HIV test result. (Table 7)

Table 7: Comparison of condom use with selected risk factors in past 12 months among traditional gold miners who had had sex with either CSW, causal or multiple partners in Bero wereda, Bench maji zone, Southern Ethiopia, April 2012. N= 165.

Variables	Used condom		Unadjusted OR (95%)	Adjusted OR (95%)
Marital status	Yes	No		P<0.001
Married	7	17	1.00	
Single***	88	53	4.03 (1.57, 10.36)*	6.72 (2.41, 18.77)*
Had multiple sexual partner				P=0.011
No	9	12	1.00	
Yes	86	58	1.98 (0.78,4.99)	3.81 (1.36, 10.66)*
Place of birth				P=0.031
In Bench maji zone	10	17	1.00	
In SNNPR not this zone	55	30	3.12 (1.27, 7.66)*	3.75 (1.4,10.0)*
Other region than SNNPR	30	23	2.22 (0.85, 5.74)	2.63 (0.94, 7.4)
Believe having multiple partner predispose to HIV				P=0.06
No	15	18	1.00	
Yes	80	53	1.85 (0.856, 3.93)	2.29 (0.91, 5.45)
Ever tested for HIV				P=0.043
No	28	33		
Yes	67	37	2.13 (1.12, 4.06)	2.14 (1.02, 4.46)*

*p<0.05

**1.00 indicates the reference group

*** Single= never married, separated, widowed or divorced

5. Discussion

The present study identified that 33.8% of traditional gold miners had multiple sexual partners in the past 12 months. Study findings in mining areas of different countries reported high prevalence of multiple sexual partners 27% in South Africa (17) and 66.1% in china (15). However, it was about nine times higher than EDHS 2011 report of 3.9% (11). The possible explanations might be due to the fact that they are migrants; and as a result they are free from family influence and traditional norms. Have making money by own, they tend to have multiple sexual partners. In addition, availability of commercial sex workers may initiate miners' emotional and sexual needs that probably lead them to have multiple sexual partners.

Surprisingly, thirty percent of miners who reported having multiple partners predispose to HIV infection have multiple sexual partners. This implies that miners who know the risk of having multiple partners were engaged in such behavior which suggests the need of interventions on behavioral change.

Consistent use of condom among all sexually active participants was low. More than two third (67.6%) of participants did not used condom consistently in the past 12 months. Among sexually active miners, 55.2% had had sex with non regular partners. Of whom 42.4% didn't use condom consistently. More than 51% of miners visited commercial sex workers in the past 12 months, of whom only 60% had used condom consistently. This is in agreement with finding in mining area in Tanzania in which 55% of mine workers paid for sex but lower condom utilization compared to the same study group in which 71% of mine workers used condom during paid sex (18).

However, use of condom during sex with CSW in Ethiopia among truck drivers (82.8%) and road construction workers (74.5%) were much larger than the finding of this study (32). Dislike of condom use, thinking that use of condom reduces pleasure and comfort and trust of partners were the reasons reported by the miners not to use condom.

The present study also revealed that condom utilizing rate during their most recent sexual intercourse with CSWs was 68.8% which is also smaller than that of truck drivers

(98.3%) and road construction workers (90.9%) from the BSSII study in Ethiopia (32) but higher than condom use during last sexual encounter with CSWs among miners in china (20.4%) (15).

The most frequently reported reasons for not using condom in past 12 months among marital or cohabiting partner was trust of one's own partner followed by desire to have children. Probably this is because they consider themselves at low risk of acquiring HIV from their spouses/ partner. Dislike of condom was the most common reported reason for not using condom among commercial and causal partners. This is in agreement with what have been found previously that many people do not like using condom because they believe that condoms cause reduced pleasure and comfort (34).

In contrast to other studies (11, 29) in which education was negatively associated with having multiple sexual partners and positively associated with condom use, in this study it was not found to be a significant associate factor of both having multiple sexual partners and condom use in the bi-variate and multivariate analysis. The possible explanation for this could be the fact that due to the nature of traditional mining, most of the miners are in the lower educational status. The higher number of lower educated miners, norms around the mining area and peer influences might dominate and influenced the decision of educated miners.

In this study alcohol use was found to be an independent factor of having multiple sexual partners. Those miners who used alcohol were more likely to have sexual partner compared to miners who never used alcohol. This result is comparable to previous studies like a study made in Botswana among general population (22). A possible explanation of this result might be that drinking alcohol may have effect on the participants' cognitive function that they are more likely to have multiple partners.

Khat chewing was also found to be positively associated with multiple partners. This result agree with the study done in Asandabo in Southwest Ethiopia in which khat chewers were two times more likely to have multiple partners compared to non chewers(26).

Marital status was associated with having multiple sexual partners both in bi-variate and multi-variate analysis. Accordingly, those single miners have tenfold increased odds of having multiple sexual partners compared to married miners. This is of course in agreement but much larger than the result of study in Botswana (22) while much smaller than study in Kenya among general population (30). Possible explanation might be that the societal norms in Ethiopia expect faithfulness in marriage, with severe consequences in cases of infidelity. Conversely, being single creates freedoms from marital obligations, hence the increased chances of engaging in having multiple sexual partners among singles.

Living continuously in Bero wereda was also found to be an associate factor of having multiple sexual partners. The odds of having multiple sexual partners was more than three times for those who lived for three years and above compared to those who lived for less than a year. Probably, this was so because as they lived longer there, they would be more familiarized with sex workers and others that could increase the opportunity to have multiple sexual partners.

The result also showed that single participants were six times more likely to use condom during sex with non regular partner compared to their Married/cohabitating counterparts. Different studies done in our country and elsewhere showed that condom use in marriage and cohabitation is uncommon (15,32, 35, 36). This might be due to the difference (58% vs 72%) in knowledge of using condom to prevent HIV infection.

This means that, married participants were not using condom during sex with non regular partner and with marital partner, which is a dangerous situation that could increase the possibility of inter spousal HIV transmission.

Having multiple sexual partners was the other important predictor of condom use. Those who have multiple sexual partners during the last 12 months were four times more likely to use condom compared to those who didn't have multiple partners but had non regular partner. Other studies also found similar association that those who have multiple sexual partners were more likely to use condom than who didn't have multiple

partners(29). This might be due to risk perception that having sexual contact with different partners leads to HIV infection.

Place of birth was the other variable which was found to be associated with condom use. Those who were born in other zones of SNNPR were four times more likely to use condom compared to miners who were born in the zone where the mining took place. This might be because those who born in the zone have more chance to be familiarized with non regular partners that could create trusting and lead to not to use condom. But further investigation need to be conducted to find out the reasons behind such behavior of the miners.

The study also revealed that those who tested for HIV had two fold increased odds of using condom than those who didn't tested for HIV. That is consistent with a previous study result in Mozambique (28).

6. Limitations and strengths of the study

The findings in this study should be interpreted in light of several limitations. First the study is based on a cross sectional design which implies that causal relationship can not always be determined. Second, as sexual behavior is a sensitive topic and data were collected by a face-to-face interview, participants were likely under-report commercial sex and other risk behaviors. Thirdly there were individuals who were not member of any team and do not dig any more but try to get gold by rewashing the already used soil. They bother here and there to find the already used soil and were not stable. It was difficult to frame them. Thus they were not included in the study. Recall bias may also exist and can distort the reported frequency of specific behavior.

The 96.4% participation rate and intensive training with field practice are strengths of the study.

7. Conclusions

The present study revealed that condom use with regular and non regular partners was low among miners. Prevalence of multiple sexual partners and sex with commercial sex workers is very high. The high prevalence of multiple sexual partners and low level of condom use during sex with non regular partner implies that traditional gold miners in the study area are experiencing risky sexual behaviors. Hence, they are at high risk of getting HIV infection and other sexually transmitting diseases.

Marital status, alcohol drinking, khat chewing, risk perception, monthly income, living in mining area for longer period and believe of having multiple partners predispose to HIV infection were associated factors of multiple partners. Marital status, having multiple partners, place of birth and knowledge of HIV test result were predictors of condom use.

8. Recommendations

Based on the findings of this study, the following recommendations are suggested.

To regional health bureau and zonal health department

- ✓ Promotion of condom use as a dual protection within marriage need to be considered.
- ✓ There is a need to work on behavioral change communication to accurately assess miners' personal risk of acquiring HIV.
- ✓ There is a need to establish and provide mobile voluntary counseling and HIV testing services in the mining area.

To wereda health office

- ✓ There is a need to educate miners about the negative effects of drinking alcohol, such as the pushing effect to get involved in multiple sexual partners.
- ✓ The nearest health centers to the mining area such as Gabissa health center need to work more on HIV intervention activities focusing on this high risk group.

To miners

- ✓ They need to know their HIV status and need to use condom consistently and properly.

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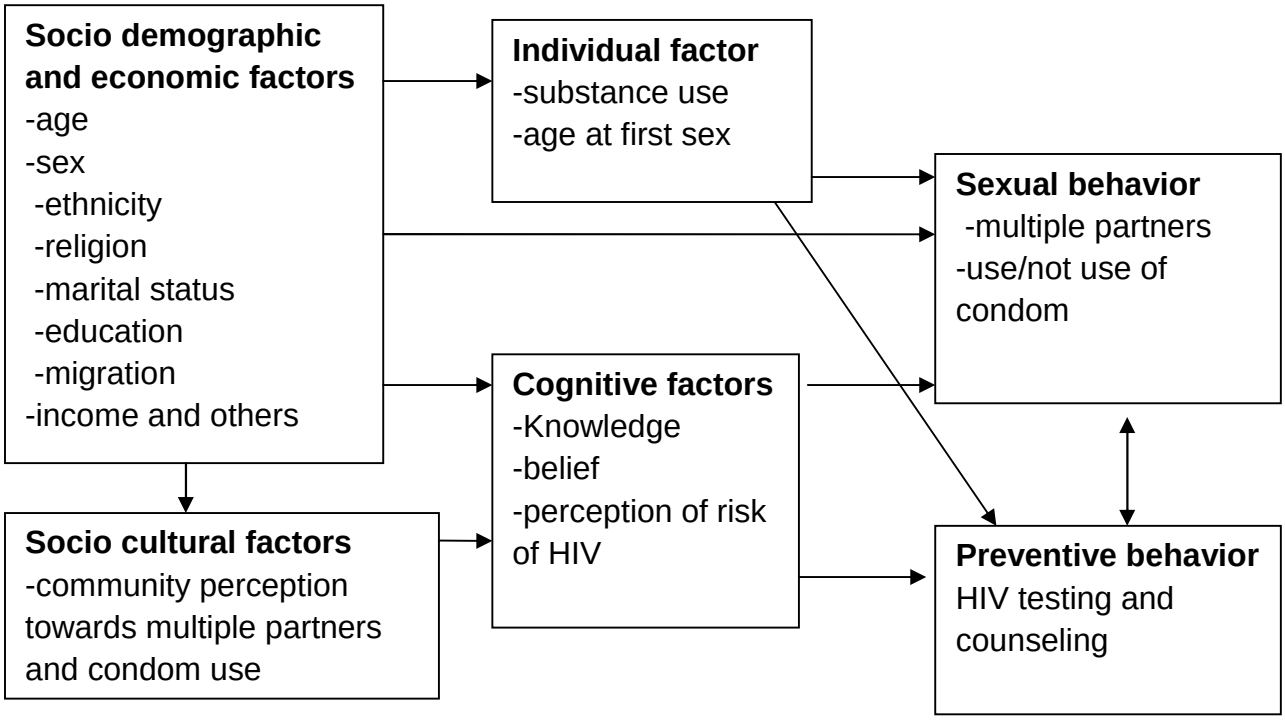
Annexes

Annex 1: Conceptual frame work



Conceptual frame work for study of risky sexual behavior among traditional gold miners in Bero wereda, Bench Maji zone, southwest Ethiopia. 2012.

Annex 2.

Questionnaire English version

Writ the codes corresponding to responses of the participants under the column labeled "code", if not coded write their response in the space provided.

Part one: Socio demographic characteristics

101. Sex of respondent?		**code**	**remark**
	1. Female		
	2. Male		
102. How old are you at your last birth day? .[_____] age in completed year			
103. What is your religion?			
	1. Orthodox		
	2. Catholic		
	3. Protestant		
	4. Muslim		
	5. No religion		
	6. Others (specify)		
104. What is your educational status?			
	1. Can not read and write.		
	2. primary		
	3. junior high school		
	4. high school		
	5.preparatory		
	6.Technical and vocational certificate and above.		
105. To which ethnic group do you belong?			
	1. Amhara		
	2. Oromo		
	3. Welayta		
	4. Bench		
	5. Dizi		
	6. Kembata		
	7.Hadiya		
	8. Kafa		
	9. Other specify		

106. What is your marital status?			If code 3 or 4, skip to 109
	1. Married		
	2. Cohabitating		
	3. Never married		
	4. Divorced, separated, widowed		
107. If you are married, are you currently living with your partner?			If yes skip to Q 109
	1. Yes		
	2. No		
108. How long have you been separated?			
	1. < 1 month		
	2. 1 to 3 month		
	3. 4 to 6 month		
	4. 6 month to 1 year		
	5. > 1year		
109. Where is your place of birth?			
	1. In this woreda		
	2. In Bench maji zone but not in this woreda		
	3. In SNNPR but not in Bench maji zone		
	4. In other region of the country		
110. For how long have you lived continuously in this wereda?			
	1. Less than 1 year		
	2. 1 to 3 years		
	3. More than 3 years		
	4. since birth		
111. How much do you earn monthly? (Ethiopia birr)			
	1 Birr [----------]		
	2 Don’t know		

Part two: Substance use

201. How often do you drink alcohol?		Code	remark
	1. Every day		
	2. Every week		
	3. Every month		
	4. Sometimes		
	5. On holydays		
	6. Never drink alcohol		
202. How often do you chew khat?			
	1. Every day		
	2. Every week		
	3. Every month		
	4. Sometimes		
	5. On holydays		
	6. Never drink alcohol		
203. How frequently do you use shisha?			
	1. Every day		
	2. Every week		
	3. Every month		
	4. Sometimes		
	5. On holydays		
	6. Never used shisha		
204. What other substances you use? -specify			

Part three: Sexual behavior

301. Have you ever had sexual intercourse?		**code**	**remark**
	1. Yes		If no skip to Q401
	2. No		
302. How old were you when you had the first sexual intercourse (__) Years			
303. Have you used condom at your first sexual intercourse?			
	1. Yes		
	2. No		
304. Have you had sex in the past 12 months?			If no skip to Q309
	1. Yes		
	2. No		
305. Think about your sexual partner you have had in the last 12 month (Multiple answer is possible)			
	1. Marital partner		
	2. Cohabiting partner		
	3.Commercial partner		
	4.Non regular partner/casual		

306. How many sexual partners did you have in the last 12 months?			
	1. One partner		
	2. More than one partner		
307. How often do you use condom during sexual intercourse in the last 12 months?			If always skip to Q 309
	1. Never		
	2. Sometimes		
	3. Always		
308. Why didn't you and your partner consistently use condom during sexual intercourse?			
	1. I trust my partner		
	2. I don't like it		
	3. Partner objection		
	4. Not available		
	5. Not comfortable		
	6. It reduce sexual pleasure		
	7. In a hurry		
	8. Too expensive		
	9. Embarrassed to ask for or to buy		
	10. I was Drunk		
	11.Don't trust condom to prevent HIV		
	12. Due to frequent condom breakage		
	13. Used other contraceptive		
	14. Want to have a child		
309. With whom did you have your last sexual intercourse?			
	1. Husband/Wife		
	2. Cohabiting partner		
	3. Irregular/causal partner		
	4. Commercial sex worker		
310. The last time you had sex, did you used condom?			
	1. Yes		
	2. NO		
311. Have you ever had sexual intercourse by giving or receiving money or exchange of materials in past 12 months?			If no skip to 401
	1.Yes		
	2.No		
312. In the past 12 months you had sexual intercourse by giving or receiving money or exchange of materials, were condom used?			
	1. Never		
	2. Sometimes		
	3. Always		

Part four: Knowledge, attitude and self perception to HIV.

401. Can people protect themselves from HIV by using a condom correctly every time they had sex (excluding other transmission route?		code	remark
	1. Yes		
	2. No		
	3. Don't know		
402. Can people protect themselves from HIV by having one uninfected faithful Sex partner? (Excluding other transmission route)?			
	1. Yes		
	2. No		
	3. Don't know		
403. Can people protect themselves from HIV by abstaining from sexual intercourse?			
	1. Yes		
	2. No		
	3. Don't know		
404. Do you believe having multiple sexual Contact leads to HIV acquisitions?			
	1. Yes		
	2. No		
	3. Don't know		
405. Do you believe alcohol consumption and drug uses can predispose to HIV acquisition?			
	1. Yes		
	2. No		
	3. Don't know		
406. What is your chance of being infected with HIV/AIDS with your current behavior?			
	1. Very likely		
	2. Likely		
	3. Neither likely nor unlikely		
	4. Unlikely		
	5. Very unlikely		
407. No need to disclose, have you ever had voluntary counseling and testing for HIV?			
	1. Yes		
	2. No		

Part five: Cultural and social factors.

501. Do you think your best friends use condom consistently to prevent HIV?		**code**	**remark**
	1. Extremely certain		
	2. Certain		
	3. Neither certain or uncertain		
	4. Uncertain		
	5. Very uncertain		
502. My best friends advice/encourage me that I should use condom when having sexual intercourse with my partner			
	1. Strongly Agree		
	2. Agree		
	3. Neutral		
	4. Disagree		
	5. Strongly Disagree		
503. Do the culture of this community (you are now living with) permits having multiple sexual partner?			
	1.Yes		
	2.No		
504. Do the culture of this community (you are now living with) accept using condom?			
	1.Yes		
	2.No		
505. How long have you worked traditional gold mining?			
	1. Less than a Year		
	2. 1 to 2 years		
	3. More than 2 years		

Annex 3: Information Sheet and consent form

Information Sheet and Consent form

Information Sheet and Consent form for clients participating on assessment of risky sexual behavior to HIV/AIDS and associated factors among traditional gold miners in Bero woreda, Bench Maji zone, Southern Ethiopia:

University of Gondar College of Medicine and Health Sciences Institute of Public Health

Name of Investigator: Kassahn Assefa

Name of the Advisers: 1. Kassahun Alemu

2. Yifoker Tefera

Name of the Sponsor: Central Statistical Agency

Information sheet is prepared for participants of the study of risky sexual behavior to HIV/Aids and associated factors among traditional gold miners in Bero Woreda.

This information sheet is prepared by a research investigator whose main aim is to study risky sexual behavior to HIV/AIDS and associated factors among traditional gold miners in Beo woreda. It uses quantitative cross-sectional study in Bero woreda, Bench Maji zone, Southern Ethiopia.

The investigator is a final year MPH student from University of Gondar, College of Medicine and Health Sciences, Institute of Public Health.

Purpose: To study the prevalence of risky sexual behavior to HIV/AIDS and associated factors among traditional gold miners in Beo woreda. Risky sexual behaviors such as having multiple sexual partner and unprotected sex with non regular partner are mostly practiced among miners in the world which places people to be infected by HIV/AIDS and STIs. This problem is common in Africa where mining areas are characterized by inadequate health facilities and services, inadequate transporting infrastructures, migrant population and less attention given population including commercial sex

workers are common. These conditions are also observed in Bero woreda. So the study will try to assess the magnitude and associated factors of risky sexual behaviors of traditional gold miners in Bero woreda and will provide valuable information on factors which influence it for health care planners, managers and society and baseline information for further detailed researches in this aspect.

Procedure: For this study, participants will be invited to take part in this project. If they are willing to participate in this project, they need to understand and sign the agreement form. Then, they will be asked to give their responses by the data collectors. They will be interviewed through interviewer administered structured questionnaire. All the responses given by the participants and results obtained will be kept confidential and no one will have access to their responses except the principal investigator.

Risk and Discomfort: There is no risk by participating in this research project. However, you may feel that participating in this research project has some discomfort especially on wasting your time but this will not be too much when compared to the benefits it contribute for the interventions to control HIV/AIDS epidemic in the area in the future.

Confidentiality: The information that will be collected from this research will be kept confidential. Information about the participants that will be collected from the study will be stored in a file which will not have the name of the participants on it and will not be revealed to anyone except the principal investigator.

Right to refuse or withdraw: The study participants have full right to refuse from participating in this research (they can choose not to respond some or all questions) if they do not wish to participate. They have also full right to withdraw from this research at any time they wish to, without losing any of their right as.

Whom to Contact: This research project will be received and approved by the editorial review board (EBR) of Institute of Public Health, University of Gondar. If you have any question contact any of the following individuals and you may ask at any time you want:

1. Kassahun Assefa (principal investigator)
   Gondar, Ethiopia

   Tel: 091101 52 40
2. Kassahun Alemu
   Institute of Public Health, University of Gondar
   Tel: 0911752466 Email: alemufass@yahoo.com
3. Yifokir Tefera.
   College of Medicine and Health Sciences, University of Gondar

   Tel: 0913754082 Email: yifoomiti@yahoo.com

Annex 4. Questionnaire Amharic version

በጎንደር ዩኒቨርስቲ በሕክምናና ጤና ሳይንስ ኮሌጅ ማሕበረሰብ ጤና ኢንስቲትዩት የባሕላዊ ወርቅ አምራቾችን ለኤች አይቪ አጋላጭ የስነ-ወሲብ ባህሪ ለማጥናት የተዘጋጀ መጠይቅ

መመሪያ፡- ለ ያንዳንዱ ጥያቄ ከአማራጮቹ ውስጥ የተሰጠውን መልስ በማክበብ በተዘጋጀው የመልስ መጻፊያ ቦ የተከበበውን ቁጥር/ኮድ/ ጻፍ፡፡

ክፍል አንድ፡- የግለሰብ ማህበራዊና ዲሞግራፊያዊ መረጃ

ጥያቄና አማራጭ መልሶች	መልስ/ኮድ/	መግለጫ
101. ፆ		
1. ወንድ 2. ሴት		
102. ዕድሜዎ ስንት ነው (በመጨረሻ ያከበሩት የልደት ዘመን) ? ---------- ዓመት		
103. የየትኛው ሀይማኖት ተከ ይ ነዎት?		
1. ኦርቶዶክስ 2. ካቶሊክ 3. ፕሮቴስ ንት 4. ሙስሊም 5. ሀይማኖት የለኝም 6. ሌላ ይግለጹ -----		
104. ያጠናቀቁት የትምህርት ደረጃ ስንት ነው? 1. ማንበብና መፃፍ የማይችል 2. 1-4 /አንደኛ ደረጃ 3. 5-8/ መለስተኛ ሁለተኛ ደረጃ 4. 9-10/ከፍተኛ ሁለተኛ ደረጃ 5. መሰናዶ 6. ተክኒክና ሙያ ሰርቲፊኬትና በላይ		
105. ብሔርዎ ምንድነው? 1. አማራ 2. ኦሮሞ 3. ወለይ 4. ቤንች 5. ዲዚ 6. ከምባ 7. ሃዲያ 8. ከፋ 9. ሌላ /ይገለጽ		

106. የጋብቻ ሁኔ ? **1. ያገባ** **2. ያለ ህጋዊ ትስስር አብሮ የሚኖር** **3. ፈፅሞ ያላገባ** **4. በሕግ የተፋ /የተለያየ/በሞት የተለየ**		**ኮድ2፣ 3 ወይም 4 ከተሞላ ወደ ጥያቄ 109 ይለፉ**
107. ያገቡ ከሆነ በአሁኑ ወቅት ከባለቤትዎ ጋር አንድ ላይ ነው የሚኖሩትን? **1. አዎን** **2. የለም**		**ኮድ 1 ከተሞላ ወደ ጥያቄ 109 ይሂዱ**
108. ከተለያዩ ምን ያህል ጊዜ ይሆኖ ል? **1. ከአንድ ወር ያንሳል** **2. 1-3 ወር** **3. 4-6 ወር** **4. 6ወር-1 ዓመት** **5. ከአንድ አመት በላይ**		
109. የተወለዱት የት ነው? **1. በዚህ ወረዳ ውስጥ** **2. ቤንች ማጂ ዞን ውስጥ ከዚህ ወረዳ ውጭ** **3. ደቡብ ክልል ውስጥ ከቤንች ማጂ ዞን ውጭ** **4. ከደቡብ ክልል ውጭ በሌላ የሃገሪቱ ክፍል**		
110. ለምን ያህል ጊዜ በዚህ ወረዳ ውስጥ ኖረዋል? **1. ከ1 ዓመት ላነሰ ጊዜ** **2. ከ1-3 ዓመት** **3. ከ3 ዓመት በላይ** **4. ከትውልድ ጀምሮ**		
111. በወር ምን ያህል ገቢ ያገኛሉ?(በኢትዮጵያ ብር) **1.ብር----------** **2. አላውቅም**		

ክፍል 2፡- የአልኮል ና የዕፅ አጠቃቀም መረጃ

ጥያቄና አማራጭ መልሶች	መልስ/ኮድ/	መግለጫ
201. በየስንት ጊዜው ነው አልኮል የሚጠጡት? **1. በየግዜው /በየቀኑ** **2. በየሳምንቱ** **3. በየወሩ** **4. አንዳንድ ጊዜ** **5. በበአላት ጊዜ** **6. በፍጹም ጠጥቼ አላውቅም**		
202. በየስንት ጌዜ ነው ጫት የሚቅሙት ? **1. በየቀኑ** **2. በየሳምቱ** **3. በየወሩ** **4. አንዳንድ ጊዜ** **5. በበአላት ጊዜ** **6. በፍጹም ቅሜ አላውቅም**		
203. በየስንት ጊዜዉ ነው ሺሻ የሚወስዱት/የሚጠቀሙት? **1. በየቀኑ** **2. በየሳምንቱ** **3. በየወሩ** **4. አንዳንድ ግዜ** **5. በበአላት ግዜ** **6. በፍጹም ተጠቅሜ አላውቅም**		
204. ሌላ የሚጠቀሙት ዕጽ አለ? **ይገለጽ----------**		

ክፍል 3 የወሲብ ባሕርያትን የተመለከተ መረጃ

ጥያቄና አማራጭ መልሶች	መልስ/ኮድ/	መግለጫ
301. የግብረ ስጋ ግንኙነት አድርገው ያውቃሉን?		
1. አዎን 2.የለም	☐	ኮድ2 ከተሞላ ወደ 401 ይሂዱ
302. ለመጀመሪያ ጊዜ የግብረ ሥጋ ግንኙነት ሲፈጽሙ ዕድሜዎ ስንት ነበር? (----------) ዓመት		
303. ለመጀመሪያ ጊዜ የግብረ ሥጋ ግንኙነት ሲፈፅሙ ኮንዶም ተጠቅመው ነበር? 1. አዎን 2. የለም	☐	
304. ባለፉት 12 ወራት ውስጥ የግብረ ሥጋ ግንኙነት ፈጽመዋል? 1. አዎን 2. የለም	☐	ኮድ 2 ከተሞላ ወደ 309 ይሂዱ
305. ባለፉት 12 ወራት ከማን ጋር ነበር የግብረ ስጋ ግንኙነት የፈጸሙት (ከአንድ በላይ ሊመልሱ ይችላሉ)? 1. ቋሚ የትዳር ጓደኛ ጋር 2. ቋሚ ከሆነች ጓደኛ ጋር 3. ከሴተኛ አዳሪ ጋር 4. መደበኛ ከልሆነ/ከመይ ወቅ ሰው ጋር	☐ ☐ ☐	
306. ባለፉት 12 ወራቶች ውስጥ ስንት የወሲብ/የፍቅር ጓደኛ ነበሮት ? 1. አንድ 2. ከአንድ በላይ 3. ምንም አልነበረኝም (ጥያቄ ቁጥር 36 ይለፉ)	☐	
307. ባለፉት 12 ወራት የግብረ ስጋ ግንኙነት ሲፈጽሙ የኮንደም አጠቃቀምዎ ሁኔ ንዴት ነበር ? 1. በጭራሽ አልጠቀምም 2. አንዳንዴ ጠቀማለሁ 3. ሁልጊዜ ጠቀማለሁ	☐	ኮድ 3 ከተሞላ ወደ 309 ይሂዱ

308. በግብረ ስጋ ግንኙነት ጊዜ ርስዎ ወይም ጓደኛዎ ለምንድነው ሁልጊዜ ኮንዶም ያልተጠቀማችሁት?/ከአንድ በላይ መልስ ይቻላል/		
1. ጓደኛዬን ስለማምነዉ/ስለማምናት		
2. ኮንዶም መጠቀም ስለማልወድ	☐	
3. ጓደኛዬ በመቃወሚ/ሙ		
4. ኮንዶም በቅርብ ስላልነበረ	☐	
5. ምቾት ስለማይሰማኝ		
6. ኮንዶም ከወሲብ የሚገኝ ርካ ን ስለሚቀነስ	☐	
7. ተቻኩለን ስለነበረ		
8. ዋጋው ውድ በመሆኑ		
9. ኮንዶም መጠየቅ ወይም መግዛት ስለምፈራ	☐	
10. መጠጥ ጠጥቼ ስለነበረ		
11. ኮንዶም ኢችአይ ይከላከላል ብዬ ስለማላምን		
12. በተደጋጋሚ ኮንዶም ስለሚቀደድብኝ		
13. ሌሎች የ ረግዝና መከላከያዎችን ስለምንጠቀም		
14. ማርገዝ/መፀነስ ስለምፈልግ		
309. ለመጨረሻ ጊዜ የግብረ ሥጋ ግንኙነት የፈጸሙት ከማን ጋር ነበር? **1. ከትዳር ጓደኛዬ ጋር** **2. ከመደበኛ/ቋሚ ጓደኛዬ ጋር** **3. ከሴተኛ አዳሪ ጋር** **4. ከመደበኛ/ቋሚ ጓደኛዬ ካልሆነ/ከዚህ ቀደም ከማላውቀው አዲስ ሰዉ ጋር**	☐	
310. ለመጨረሻ ጊዜ የግብረስጋ ግንኙነት ሲፈፅሙ ኮንዶም ተጠቅመው ነበር?		
1. አዎን **2. የለም**	☐	
311. ባለፉት 12 ወራት ገንዘብ በመስጠት ወይም በመቀበል ወይም በዕቃ ስጦ የግብረ ስጋ ግንኙነት ፈጽመዋል?		
1. አዎን **2. የለም**	☐	
312. ባለፉት 12 ወራት ገንዘብ በመስጠት ወይም በመቀበል ወይም በዕቃ ስጦ የግብረ ስጋ ግንኙነት ሲፈጽሙ ኮንዶም ተጠቅመዋል?		
1. በጭራሽ አልጠቀምም **2. አንዳንዴ ጠቀማለሁ** **3. ሁልጊዜ ጠቀማለሁ**	☐	

ክፍል 4 ዕዉቀትና አመለካከትን የሚገልፅ መረጃ

ጥያቄና አማራጭ መልሶች	መልስ/ኮድ/	መግለጫ
401. ሰዎች ኮንዶምን በትክክል በመጠቀም ራሳቸውን በግብረስጋ ግንኙነት አማካኝነት ከሚተላለፈዉ ከኤች አይቪ/ኤድስ በትክክል መከላከል ይችላሉን?		
1. አዎን	☐	
2. የለም		
3 አላውቅም		
402. ሌሎች የመተላለፍያ መንገዶችን ትተን ሰዎች ለኤች አይቪ ያልተጋለጠ/ች አንድ ማኝ የፍቅር ጓደኛ ብቻ በመያዝ ኤች አይ ቪ/ ኤድስን መከላከል ይችላሉን?		
1. አዎን		
2. የለም	☐	
3. አላውቅም		
403. ሰዎች ከግብረ ሥጋ ግንኙነት በመ ቀብ ከኤች አይ ቪ /ኤድስ ራሳቸውን መከላከል ይችላሉን?		
1. አዎን		
2. የለም	☐	
3. አላውቅም		
404. ብዙ የወሲብ ጓደኛ መኖሩ ለኤች አይ ቪ አድስ ያጋልጣል ብለው ያምናሉን?		
1. አዎን		
2. የለም	☐	
3. አላውቅም		
405. አልኮልና አደንዛዥ ጾች ተጠቃሚ መሆን ለኤች አይ ቪ አድስ ያጋልጣል ብለው ያምናለን?		
1. አዎን	☐	
2. የለም		
3. አላውቅም		
406. አሁን ያሎት ባህሪ ለኤች አይ ቪ / ኤድስ ምን ያህል ያጋልጠኛል ብለዉ ያስባሉ?		
1. በከፍተኛ ሁኔ ሊያጋልጠኝ ይችላል		
2. ሊያጋልጠኝ ይችላል	☐	
3. ሊያጋልጠኝም ላያጋልጠኝም ይችላል		
4. ሊያጋልጠኝ አይችልም		
5. በፍፁም አያጋልጠኝም		
407. ውጤቱን መግለጽ አያስፈልግም፡፡ ከዚህ በፊት በፈቃደኝነት ላይ የተመሠረተ የኤች አይ ቪ ኤድስ ምርመራ አድርገው ያውቃሉ?		
1. አዎን	☐	
2. የለም		

ክፍል5፡- ባህላዊና ማሕበራዊ መረጃ

ጥያቄና አማራጭ መልሶች	መልስ/ኮድ/	መግለጫ
501. ለ ኔ ጠቃሚ የሆኑ ና የማከብራቸው ሰዎች የግብረ ስጋ ግንኙነት በሚያደርጉበት ጊዜ ኮንዶም ይጠቀማሉ? 1. በጣም ስማማለሁ 2. ስማማለሁ 3. አላውቅም 4. አልስማማም 5. በጣም አልስማማም		
502. ለኔ ጠቃሚ የሆኑና የማከብራቸው ሰዎች ኔ ኮንደም ንድጠቀም ያበረ ቱኛል/ይመክሩኛል ? 1. በጣም ስማማለሁ 2. ስማማለሁ 3. ልጠቃምም ላልጠቃምም ችላለሁ 4. አልስማማም 5. በጣም አልስማማም		
503. የዚህ ማሕበረሰብ በህል ከአንድ በላይ የግብረ ስጋ ጓደኛ መያዝ ይፈልቅዳል? 1. አዎን 2. የለም		
504. የዚህ ማሕበረሰብ በህል ኮነዶም መጠቀምን ይደግፋል? 1. አዎን 2. የለም		
505. ለምን ያህል ጊዜ በባህላዊ የወርቅ ማምረት ስራ ተሰማሩ? 1. ከ1 ዓመት በ ች 2. ከ1-2 ዓመት 3. ከ3 ዓመት በላይ		

Annex 5: Amharic version information sheet and consent form

የመረጃና የስምምነት ውል

የምርምሩ/የጥናቱ ስም፡ በደቡብ ክልል በቤንች ማጂ ቤሩ ወረዳ የሚገኙ ባህላዊ ወርቅ አምራቾች ለኤች አይ ቪ ኤድስ አጋላጭ የሆኑ የስነ ወሲብ ባህርያትን በተመለከተ የሚደረግ የዳሰሳ ጥናት

የድርጅቱ ስም በጎንደር ዩኒቨርስቲ ህክምናና ጤና ሳይንስ ኮሌጅ የህብረተሰብ ጤና አጠባበቅ ኢንስትቱት

የዋና ተመራማሪው ስም፤ ካሳሁን አሰፋ

አማካሪ መምህራን፤ አቶ ካሳሁን አለሙ

አቶ ይፍክር ተፈራ

ወጪውን የሚሸፍነው: የማዕከላዊ ስታቲስቲክስ ኤጀንሲ

በደቡብ ክልል በቤንች ማጂ ዞን ቤሮ ወረዳ በሚገኙ ባህላዊ ወርቅ አምራቾች ለኤች አይ ቪ ኤድስ አጋላጭ በሆኑ የስነ ወሲብ ባህርያትን በተመለከተ በሚደረግ ጥናት ላይ ተሳታፊ ለሚሆኑ ወርቅ አምራቾች የተዘጋጀ የመረጃና የስምምነት ውል ቅፅ፡፡

መግቢያ

ይህ የመረጃና የስምምነት ውል ቅፅ የተዘጋጀው እርስዎ ተሳታፊ እንዲሆኑ ስለተጋበዙበት በምርምር ቡድኑ የሚካሄደውን ጥናት በተመለከተ መግለጫ ለመስጠት ነው፡፡ የምርምር ፕሮጀክቱ ዋና ዓላማ በቤንች ማጂ ዞን ቤሮ ወረዳ የሚገኙ ባህላዊ ወርቅ አምራቾች ለኤች አይ ቪ ኤድስ አጋላጭ የሆኑ የስነ ወሲብ ባህርየትን መጠንና መንስኤዎቻቸውን ለማጥናት ነው፡፡ የዚህ ጥናት ተመራማሪ በጎንደር ዩኒቨርሲቲ ህክምናና ጤና ሣይንስ ኮሌጅ የህብረተሰብ ጤና ሣይንስ የማስተርስ ድግሪ የመጨረሻ ዓመት ተማሪ ነው፡፡

የጥናት ፕሮጀክቱ የሚካሄድበት ምክንያት

የጥናቱ ዓላማ በደቡብ ክልል ቤንች ማጂ ዞን ቤሮ ወረዳ የሚገኙ ባህላዊ ወርቅ አምራቾች ለኤች አይ ቪ ኤድስ አጋላጭ የሆኑ የስነ ወሲብ ባህርያትን መጠንና ስፋት እንዲሁም ለነዚህ ክስተቶች ምክንየቶች ምን እንደሆኑ ለማጥናት ነው፡፡ ለኤች አይ ቪ አጋላጭ የስነ ወሲብ ባህርያትን ለምሣሌ ከአንድ በላይ የወሲብ ጓደኛ መያዝ እና ቋሚ ካልሆነ የወሲብ ጓደኛ ጋር ያለ ኮንዶም ወሲብ መፈጸም በአብዛኛው የአለም ክፍል በሚገኙ ማዕድን አምራቾች ዘንድ የሚታዩ ባህርያት ናቸው፡፡

ችግሩ ማዕድን በሚመረትባቸው የአፍሪካ ሃገራት በብዛት የሚታይ ሲሆን እነዚህ አከባቢዎች የጤና አገልግሎትና መሠረተ ልማት ያልተሟላላቸው፣ የትራንስፖርት ችግር ያለባቸው፣ መጤ ህብረተሰብና ትኩረት ያልተሰጣቸው እንደ ሴተኛ አዳሪዎች የሚገኙባቸው ናቸው፡፡ እነዚህ ሁኔታዎች በቤሮ ወረዳ በሚገኙ ማዕድን አምራቾችም ይስተዋላሉ፡፡

ስለሆነም ይህ ጥናት የእነዚህን የስነ ወሲብ ባህርያት መጠንና ስፋት እንዲሁም መንስኤዎቻቸውን በማጥናት ለጤና ዕቅድ አውጪዎች፣ ለሃላፊዎችና ለህብረተሰቡ በባህላዊ ወረቅ አምራቾች ውስጥ የኤች አይ ቪ ኤድስን ስርጭት ለመከላከል፣ ለችግሩ መፍትሔ ለመፈለግና ጠቃሚ ዕቅድ ለመንደፍ የሚያስችል ሲሆን ለሌሎች ተመራማሪዎችም እንደመነሻ ሃሣብ በመሆን ያገለግላል፡፡

የአተገባበር ቅደም ተከተል

ባህላዊ የወርቅ አምራቾች በጥናቱ እንዲሣተፉ ይጋበዛሉ፡፡ በጥናቱ ለመሣተፍ ፈቃደኛ ከሆኑ የፍቃደኛነት ፎርስምምነቱን እንዲያውቁ ተደርጎ ስምምነታቸውን እንዲገልጹ ይደረጋል፡፡ ከዚያም በተዘጋጀው መጠይቅ መሠረት በመረጃ ሰብሳቢዎች ጥያቄ እየቀረበላቸው የሚሰጡት መልስ እየተሞላ መረጃው ይሰበሰባል፡፡

ሊገጥም የሚችል ችግር ወይም አለመመቻቸት

በዚህ ጥናት ላይ ተሳታፊ በመሆንዎ አንዳንድ አለመመቻቸት ሊኖር ይችላል በተለይም ደግሞ ጊዜዎን መሻማታችን (ቢበዛ 40 ደቂቃ) አይቀርም፡፡ ሆኖም እርስዎ የሚሰጡን መረጃ የባህላዊ ወርቅ አምራቾችን ለኤድስ አጋላጭ የሆኑ የስነ ወሲብ ባህርየትን በመገንዘብ ተገቢውን

መፍትሄ ለመሻት የሚረዳ በመሆኑ ጥቅሙ የጎላ ነው። በመሆኑም በዚህ ጥናት ተሳታፊ በመሆንዎ ምንም ዓይነት ጉዳት አይደርስብዎትም።

ምስጢራዊነት

ለዚህ ጥናት ፕሮጀክት የሚሰበሰብ ማንኛውም ዓይነት መረጃ በምስጢራዊነት የሚጠበቅ ሲሆን እርስዎን በተመለከተ የሚሰበሰበው መረጃ የእርስዎ ስም ሳይገፍበት ነገር ግን ምስጢራዊ ቁጥር ተሰጥቶት በፋይል ውስጥ የሚቀመጥ ይሆናል። እንዲሁም መረጃው ከጥናቱ ዋና ተመራማሪ እና ረዳቶቹ በስተቀር ለሌላ ለማንኛውም አይነት ሰው ግልፅ አይሆንም።

ከጥናቱ ያለመሳተፍ ወይም የማቋረጥ መብት

በዚህ ጥናት ያለመሳተፍ መብትዎ ሙሉ በሙሉ የተጠበቀ ነው። ለጥያቄዎቹ በሙሉም ሆነ በከፊል መልስ አለመስጠት ይችላሉ። እንዲሁም በፈለጉት ሰዓት ማንኛውንም መብትዎን ሳያጡ የማቋረጥ ሙሉ መብት አለዎት።

ሊገናኙዋቸው የሚችሉ ሰዎች

ይህ የምርምር ፕሮጀክት በጎንደር ዩኒቨርስቲ የስነ ምግባር ኮሚቴ ተከልሶ የሚፀድቅ ይሆናል። የበለጠ መረጃ ማግኘት የሚፈልጉ ከሆነ ኮሚቴውን በሚከተለው አድራሻ ማግኘት ይችላሉ። የትኛውም ዓይነት ጥያቄ ሲኖርዎት ከዚህ ቀጥሎ የተጠቀሱትን ግለሰቦች ማግኘትና በማንኛውም ጊዜ መጠየቅ ይችላሉ።

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Declaration

I, the undersigned, senior health informatics student declare that this thesis is my original work in partial fulfillment of the requirement for the Master of Public Health in Health Informatics.

Name: _____

Signature: _____

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Date of Submission: _____

This thesis work has been submitted for examination with my/ our approval as university advisor(s).

Advisors

Name signature

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2. _____ _____